

contacting the template with a mixture of nucleotide triphosphates, the mixture comprising nucleotide triphosphates that are complementary to the nucleotides of the template, wherein the nucleotide triphosphate complementary to the non-standard nucleotide at the preselected site comprises a derivatized nucleotide; and

D1 forming an oligonucleotide complementary to a portion of the template comprising the non-standard nucleotide by enzymatic polymerization of the nucleotide triphosphates in a sequence complementary to the portion of the template, wherein a derivatized purine complementary to the non-standard nucleotide is incorporated opposite the non-standard nucleotide at the preselected site if the non-standard nucleotide is a pyrimidine, or wherein a derivatized pyrimidine complementary to the non-standard nucleotide is incorporated opposite the non-standard nucleotide at the preselected site if the non-standard nucleotide is a purine.

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Please add the following new claims:

15. A method of making an oligonucleotide, the method comprising:  
providing a template oligonucleotide comprising a sequence of nucleotides, the template comprising at least one non-standard nucleotide at a preselected site in the sequence;

D2 contacting the template with a mixture of nucleotide triphosphates, the mixture comprising nucleotide triphosphates that are complementary to the nucleotides of the template, wherein the nucleotide triphosphate complementary to the non-standard nucleotide at the preselected site comprises a derivatized nucleotide; and

forming an oligonucleotide complementary to a portion of the template by enzymatic polymerization of the nucleotide triphosphates in a sequence complementary to the portion of the template, wherein the non-standard nucleotide at the preselected site is iso-G or iso-C.

16. A method of making an oligonucleotide, the method comprising:  
providing a template oligonucleotide comprising a sequence of nucleotides, the template comprising at least one non-standard nucleotide at a preselected site in the sequence;

contacting the template with a mixture of nucleotide triphosphates, the mixture comprising nucleotide triphosphates that are complementary to the nucleotides of the template, wherein the nucleotide triphosphate complementary to the non-standard

nucleotide at the preselected site comprises a derivatized nucleotide comprising biotin, thiol, or hydrazine; and

forming an oligonucleotide complementary to a portion of the template by enzymatic polymerization of the nucleotide triphosphates in a sequence complementary to the portion of the template.

17. A method of making an oligonucleotide, the method comprising:

providing a template oligonucleotide comprising a sequence of nucleotides, the template comprising at least one non-standard nucleotide at a preselected site in the sequence;

contacting the template with a mixture of nucleotide triphosphates, the mixture comprising nucleotide triphosphates that are complementary to the nucleotides of the template, wherein the nucleotide triphosphate complementary to the non-standard nucleotide at the preselected site comprises a derivatized nucleotide comprising a radiolabel; and

forming an oligonucleotide complementary to a portion of the template by enzymatic polymerization of the nucleotide triphosphates in a sequence complementary to the portion of the template.

18. The method of claim 17, wherein the radiolabel comprises  $^3\text{H}$  or  $^{32}\text{P}$ .